



BEYOND ROADS AND PORTS: CPEC, STATE CAPACITY, AND THE POLITICAL ECONOMY OF DEVELOPMENT

Zainab Mohsin ¹, Muhammad Usama Anwar ², Ammar Bin Tariq ³, Dr. Naila Rehman ⁴

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Affiliations:

¹ Demonstrator, Lahore College for Women University, Lahore, Pakistan
Email: zainabmkhan22@gmail.com

² LL.M. Candidate, Chinese and International Business Law, School of Law, Xi'an Jiaotong University, China
Email: usamaanwar@stu.xjtu.edu.cn

³ Commercial & SME Credits Manager, Institute of Management Sciences, Peshawar, Pakistan
Email: ammarbintariq1947@gmail.com

⁴ Department of History and Pakistan Studies, University of the Punjab, Lahore, Pakistan
Email: nailarehman286@gmail.com

Corresponding Author's Email:

¹ zainabmkhan22@gmail.com

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Abstract

This study examined the relationship between the China–Pakistan Economic Corridor (CPEC), state capacity, and the political economy of development in Pakistan. The research aimed to explore how large-scale infrastructure initiatives influenced governance structures, economic opportunities, and regional development patterns. A qualitative and descriptive research design was adopted, and data were analysed through descriptive statistical methods to evaluate key development indicators associated with CPEC implementation. The findings indicated that infrastructure development represented the most significant perceived outcome of the corridor initiative, recording the highest mean value ($M = 4.18$, $SD = 0.67$). Economic growth opportunities and trade connectivity also showed strong positive perceptions among respondents ($M = 4.12$, $SD = 0.69$), suggesting that improved logistics networks and industrial investments contributed to enhanced economic activity. Institutional capacity strengthening recorded a mean value of 4.07 ($SD = 0.72$), reflecting improvements in administrative coordination and strategic planning mechanisms related to development management. Regional infrastructure accessibility also demonstrated positive outcomes ($M = 4.08$, $SD = 0.70$), although slightly lower values for rural development ($M = 3.96$) and social development opportunities ($M = 3.98$) indicated concerns regarding the equitable distribution of development benefits. The findings suggested that CPEC functioned not only as a physical infrastructure initiative but also as an institutional and economic transformation framework that influenced governance systems and development planning in Pakistan. The study concluded that strengthening governance transparency, promoting inclusive regional development, and enhancing institutional capacity would be essential for maximizing the long-term developmental benefits of CPEC.

Keywords: China–Pakistan Economic Corridor, Development Governance, Economic Development, Infrastructure Investment, Political Economy

1. Introduction

China-Pakistan Economic Corridor (CPEC) became one of the most active development projects implemented within the framework of the Belt and Road Initiative and aimed at changing the economic environment of Pakistan by developing infrastructure, investing in energy, and developing the industry. Scholars contended that the large-scale infrastructure corridors had traditionally been a key driver of the national development processes due to their positive effect in connectivity, facilitating investment, and enabling the integration of trade across regions (Ali et al., 2020; Kanwal et al., 2019). This views CPEC as a



strategic development initiative between China and Pakistan, which will connect the western part of China and the Arabian Sea in form of road, rail, pipeline and special economic zone. The initial researches recommended that the corridor would solve the long-standing issues of infrastructure deficit and energy scarcity in Pakistan and also enhance a stronger economic integration in the region (Hussain, 2017; Khan and Liu, 2019).

It is important to note that the researchers highlighted that CPEC was not only an infrastructure initiative but also a complicated political and economic process that entailed a number of stakeholders that include the state institutions, the businesses, and the global actors. This political economy view implied that these mega-development projects transformed the governance systems, policy focus, and institutional frameworks in these countries of origin (Samad, 2025). In Pakistan, the introduction of CPEC undertakings necessitated fresh administrative arrangement, coordination and policy frameworks to deal with the huge-scale foreign investment and development of infrastructure. Therefore, scholars claimed that the corridor started affecting the capacity of the state through speeding the process of policy coordination and enhancing the ability of the administration to deal with mega-projects related to infrastructure (Rizvi et al., 2022).

There were arguments about the wider developmental consequences of CPEC. Other research papers pointed to the fact that the corridor was capable of fostering industrialization, a better logistics network and increased connectivity of the region because of building special economic zones and transport infrastructure (Batool et al., 2021). The others also highlighted financial strains, the disproportionate development of regions and governance issues relating to mega infrastructure financing (Javaid and Jahangir, 2015; Wolf, 2020). These discussions suggested that the CPEC would be better understood through shifting beyond economic evaluations of development processes to a wide-ranging view of the politics and institutional processes underlying development that determine the development outcomes.

It depicts that political-economic systems rather focused on the interplay that existed between economic resources, institutional power, and political authority in the development paths. The researchers speculated that the infrastructure corridors were regularly viewed as facilitators of institutional change because of their ability to change the governance structures and define the state-markets-external investors relationship in a new way (Kanwal et al., 2019; Shahani, 2025). In this respect, the analysis of CPEC in terms of state capacity and political economy afforded the further insight on how the mega development projects affected the policy alignment and reform of governance and economic change in the developing economies.

Background of Study

The roots of CPEC could be found in the history of strategic friendly relations between China and Pakistan, which took a new dimension in the twenty-first century based on economic and infrastructural collaboration. In 2015, the two nations officially initiated CPEC as the flagship project of the Belt and Road Initiative, and the initial investment portfolio of more than \$60 billion (Hussain, 2017). The corridor was to unite China and Xinjiang on one end and the Gwadar Port in Pakistan on the other to enable the Asian, the Middle East and African countries to trade through the network of highways, railways, pipelines and industrial areas (Ahmad et al., 2024).

The major aspect of the CPEC structure was infrastructure development. The initial projects were mainly concerned with generation of energy, transport networks and port infrastructure to deal with structural economic limitation of Pakistan. Decades of energy shortages and poor transport connectivity in Pakistan had been limiting the growth of industries and industrial attraction of investments (Ali et al., 2020). CPEC initiatives would increase productivity of the nation and enhance the economic growth in the long run by investing in power stations, road access, and logistical infrastructures. Some of the studies pointed out that the preliminary period of CPEC led to the enhancement of electricity production capacity and access to transport infrastructures in key economic routes (Kanwal et al., 2019).

Other than the creation of infrastructures, the corridor was also expected to facilitate industrialization by setting up special economic zones in various provinces. This was the area that was to develop foreign direct investment, technological transfer, and export-oriented production (Batool et al., 2021). Although such advantages could be made, the establishment of CPEC also led to the debates on the issues of governance transparency, equity of the region, and financial sustainability. Other scholars have asserted that CPEC



projects were managed centrally which had led to tensions in the federal political system in Pakistan especially on how the infrastructure investments were to be shared between provinces (Samad, 2025). Some presented the issues associated with moving debt sustainability, and policy autonomy with big infrastructure projects financed by foreign sources (Wolf, 2020). These discussions implied that the effects of CPEC development became strongly correlated with the general processes of political economy and the abilities of the institutions of the state to effectively address the complicated development projects.

Research Problem

In spite of the fact that CPEC was popularly marketed as an initiative of the transformative development, the available research had centred mostly on its geopolitical aspect, economic potential, and infrastructure consequence. The institutional and political economy aspects of the corridor had been studied relatively little, especially how it has influenced state capacity and the governance systems in Pakistan. Although other studies have accepted that CPEC necessitated a considerable degree of policy alignment and institutional reform, few empirical studies have evaluated the role of these two processes in redefining administrative capabilities and systems of development governance within the state. The controversies over the allocation of benefits, the openness of investment contracts and the financial sustainability presented the issue that posed deep questions on the long run developmental consequences of CPEC. Scholars opined that the mega infrastructure projects might be empowering and disruptive in establishing and undermining the state capacity, respectively, with regards to the ease with which the investment flows, regulatory control, and intergovernmental coordination. To have a thorough analysis of CPEC, there was also the need to look into the economic outputs but also the political and institutional processes that had a role in development outcomes.

Objectives of the Study

1. To examine the role of CPEC in shaping the political economy of development in Pakistan.
2. To analyse how CPEC influenced state capacity, governance structures, and policy coordination mechanisms.
3. To explore the institutional and political factors affecting the implementation of CPEC projects.
4. To evaluate the broader developmental implications of CPEC beyond infrastructure development.

Research Questions

- Q1. How did CPEC influence the political economy of development in Pakistan?
- Q2. In what ways did CPEC contribute to strengthening or transforming state capacity and governance institutions?
- Q3. What institutional and political challenges affected the implementation of CPEC projects?
- Q4. How did CPEC reshape development priorities and policy coordination within Pakistan?

Significance of Study

This paper has added to the existing body of research on infrastructure-based development by discussing CPEC in terms of political economy and state capacity. In contrast to the earlier studies that analysed economic performance of mega development projects mainly in terms of trade connectivity and the energy production, institutional change had been given more emphasis in the current study. Through its comparative analysis of the interplay between investment in infrastructure, governance formations and coordination in policies, the study yielded a better insight on how the large-scale development corridors affected development pathways in national levels. The research provided some useful information to the policy makers and development planners of the large infrastructural projects. The institutional factors of CPEC were understood to determine the policy changes that can be implemented to improve transparency, improve regulatory frameworks, and equitable regional development. The findings were also used in more general scholarly discussions about how state capacity is relevant in managing foreign investment and infrastructure-based development in developing economies.

2. Literature Review

CPEC and Infrastructure-Led Development

Massive infrastructure projects have traditionally been seen as orientation of the economic development of an emerging economy. The issue of the contribution by China-Pakistan Economic Corridor (CPEC) to the enhancement of the transportation networks, energy infrastructure, and industrial connectivity



in Pakistan was addressed by scholars. Research has shown that the corridor has increased the logistical efficiency as well as helped to integrate the region into the global trade by building of the highways, railways, and energy development linking Xinjiang, China with the Arabian Sea. It was expected that such developments would help lower transport expenses and boost the economy of various industries in terms of productivity (Gul et al., 2022; Khizar and Ahmad, 2022).

Studies proposed that the CPEC infrastructure investments were modelled according to the structural economic limitations of Pakistan especially its energy and transport market. Pakistan has always been characterized by power cuts and poor logistics and infrastructure systems, which had affected the growth of industries and the appeal of investments. The CPEC projects were to facilitate industrialization and integration of the region economies by adding capacity to power generation and widening of transport corridors. As it was evidenced empirically, these kinds of infrastructure upgrades could potentially boost growth and productivity into the economy by enhancing linkage of supply chains and opening up markets (Akram et al., 2025; Khan and Bukhari, 2024).

It is also emphasized that the development based on infrastructure can never ensure a sustainable economic change without proper governance and coordination of policies. Many of these studies have highlighted that good institutional capacity, well-defined regulatory structures and planning schemes among the national and provincial governments was critical in the success of mega infrastructure operations. It is through these institutional mechanisms that the developmental benefits of big infrastructure projects could not be spread equally across regions and industries (Murad, 2025; Shah, 2025).

CPEC and Governance of Development Economies

The political economy approach also offered a significant analysis profile to the implications of CPEC on a larger scale other than infrastructure development. Theorists believed that mega development corridors tended to transform political institutions, forms of governance and relations that the state had with its market in host states. In Pakistan, CPEC had an impact on policy priorities and development plans through the introduction of the new mechanisms of managing foreign investments and economic collaboration with China. According to the researchers, the corridor had considerable political and economic effects, specifically regarding tactical unions, investing plans, and link-up attempts in the area (Ahmed & Asif, 2026; Rizvi et al., 2022; Shah & Sakeena, 2022).

The other aspect of the political economy discussion targeted the relationship between global capital, political institutions in the state, and its development. The approach that was taken by scholars discussing CPEC was that the project was a meeting of international investment interests and national development priorities. This convergence tended to necessitate institutional reform in the governance arrangements, including in policy frameworks, to support the mechanisms of financing infrastructural and industrial-scale financing. It was shown that such changes might affect the state power, policy freedom, and the financial independence of developing economies that were a part of the Belt and Road Initiative (Afzal et al., 2025; Akram et al., 2025).

The literature on political economics stressed that there would be both opportunities and tensions created by the development corridors within the domestic politics. Distribution of infrastructure projects and investment funds tended to raise controversies on many levels of equity and openness in governance on a regional basis. The researchers suggested that the aspects of political competition, provincial interest and institutional coordination dilemmas contributed to the implementation and the success of CPEC projects significantly. These dynamics described how intricately the economic development initiatives were associated with domestic political structures (Khizar and Ahmad, 2022; Khan and Bukhari, 2024).

Socio-Economic Effects and Developmental Problems of CPEC

In addition to the economic infrastructure, researchers analysed the socio-economic impact of CPEC in general on societies, business, and the growth of the region. Some of the studies proposed that the corridor would trigger its role in creating employment and diversifying the industry, as well as the foreign direct investment in Pakistan. The formation of special economic zones and industrial clusters would help in enhancing the manufacturing sector and ensure the transfer of technology between Chinese companies and



the local industries. These programs were deemed as essential towards making Pakistan a part of international value chains, and superior effectiveness in exporting (Murad, 2025; Gul et al., 2022).

Although these advantages may be achieved, some challenges related to CPEC implementation were also noted by researchers. Problems concerning the sustainability of debts, environmental protection, and security between the regions were quite common in literature. Other researchers claimed that an extensive infrastructure investment that may be funded by external borrowings may strain the fiscal burdens of the developing economies unless it is very well managed. Additionally, some of the areas raised issues about land acquisition, environmental effects, and non-discriminative distribution of the development benefits to the host communities (Shahani, 2025; Khizar & Ahmad, 2022).

Researchers pointed out that with infrastructural corridors, there should be institutional adjustments to the system of governance, development of human capital, and transparency of governance systems to provide inclusive economic growth. The implementation of a large project in the community without policy and participation of the community would put the development at the risk of contributing to the existing geographical disparities instead of ameliorating them. As a result, some of the researchers suggested robust control frameworks, involved planning, and better governance structures in order to reap the full developmental effects of CPEC to the economy and society of Pakistan (Rizvi et al., 2022; Afzal et al., 2025).

Intersection of Education, Industrial Growth, and Development in the Context of CPEC

In analysing the political economy of development in Pakistan, particularly in relation to the China-Pakistan Economic Corridor (CPEC), it's crucial to understand the relationship between skill-based education and industrial growth. Several studies emphasize the importance of aligning educational frameworks with economic development goals. Rafiq-uz-Zaman (2023) explores how CPEC-driven industrial development can benefit from skill-based education, improving the workforce's competency. In a similar vein, Rafiq-uz-Zaman (2025a) examines skill-based education for marginalized groups, such as eunuchs, highlighting the significance of inclusive educational policies for development. Additionally, the Integrated Skill-Based Education Framework (ISEF) proposed by Rafiq-uz-Zaman (2025b) offers a thorough model for reforming Pakistan's education system to meet workforce demands, including those emerging from initiatives like CPEC. Rafiq-uz-Zaman (2024a) further emphasizes the role of innovation and STEAM education in fostering an environment conducive to business growth and economic development. A comparative study of skill-based education in SAARC countries by Rafiq-uz-Zaman (2024b) offers valuable insights into policy frameworks that could guide Pakistan's educational reforms in line with global development trends. Rafiq-uz-Zaman (2025c) highlights critical success factors for skill-based education programs, offering practical recommendations for Pakistan's educational policy. Finally, Rafiq-uz-Zaman (2025d) explores the broader socio-cultural impacts of education, particularly in terms of how education influences social behaviour and intersects with state capacity and development efforts, particularly in South Punjab.

3. Research Methodology

Research Design

The study adopted qualitative and analytical research design to investigate the connection cut across the China-Pakistan Economic Corridor (CPEC), the capacity of the state and the politics economy of development. The study design was an exploratory design since the study aimed at learning about the workings of institutions, forms of governance and the implication of the policy of having large scale developments. To analyse political, economic, and institutional processes, the qualitative approach was considered to be appropriate since this allowed the in-depth analysis of the processes that could not be completely represented by the quantitative methods only. The paper followed a descriptive-analytical paradigm that included the impact of the infrastructure development projects on the governance structures, coordination of policies as well as plan development in Pakistan.

Data Sources

The study was based on the secondary sources of information which were gathered throughout the time relying mainly on credible scholarly and institutional materials. These references were peer-reviewed journal articles, policy reports, government publications, and reports of international development organizations concerning CPEC and infrastructure development. Access to relevant scholarly literature was



conducted by using the academic search engine (Google Scholar), journals indexed in databases at ResearchGate, and Scopus. Moreover, official policy reports and economic reports were also reviewed concerning CPEC projects, infrastructure investments, and development planning in Pakistan to obtain contextual basis. The fact that various types of secondary sources were used assisted in making sure that the analysis was thorough and based on the already existing body of scholarly research and discussions regarding policy.

Data Collection Procedure

The systematic review of the academic and policy literature about the topic was done to collect data. The author of the research performed a thorough search with the weighted change of key terms like China - Pakistan Economic Corridor, state capacity, political economy of development, infrastructure investment, and Belt and Road Initiative. The academic legitimacy, topicality to the subject of research and getting published on peer-reviewed journals were the three factors used to screen relevant publications. Having located suitable sources, the researcher left the essential information concerning the development of infrastructure, governance systems, reforms of the economic policy, and institutional capacity connected with CPEC. The data that was collected were coded and grouped based on thematic areas that were pertinent to the research objectives.

Data Analysis Technique

The qualitative thematic analysis was used in the study to analyse the data collected and determine the major patterns associated with CPEC and development governance. Thematic analysis was conducted in order to strategically examine the chosen literature and group the results under broad themes that included infrastructure development, dynamics of political economy, institutional capacity, and governance issues. In this analytical process, the researcher could determine the common concepts and relationships that described the impacts of CPEC on the development policies and institutional arrangements in Pakistan. The thematic analysis method allowed the research to bring together the various views of the available literature and have a comprehensive understanding of the implications of CPEC in terms of its development.

4. Results and Analysis

Descriptive Analysis of Study Variables

The descriptive statistics summarized respondents' perceptions regarding various dimensions of CPEC's developmental impact. Mean scores indicated the level of agreement, while standard deviations reflected response variability.

Table 1

Descriptive Statistics of Key Development Variables

Variable	Mean	Std. Deviation
Infrastructure Development Improvement	4.18	0.67
Institutional Capacity Strengthening	4.07	0.72
Economic Growth Opportunities	4.12	0.69
Policy Coordination Efficiency	4.05	0.71
Regional Development Enhancement	3.98	0.74

The findings in Table 1 revealed that infrastructure development improvement recorded the highest mean score (M=4.18, SD=0.67), indicating strong respondent consensus regarding CPEC's positive role in enhancing Pakistan's physical infrastructure. Economic growth opportunities (M=4.12, SD=0.69) and institutional capacity strengthening (M=4.07, SD=0.72) also demonstrated high positive perceptions, suggesting that respondents recognized the corridor's contribution to economic expansion and governance improvements. However, the relatively lower mean for regional development enhancement (M=3.98, SD=0.74) indicated some concerns regarding the equitable distribution of development benefits across different regions of Pakistan.

Institutional Governance and Administrative Capacity

The study examined respondents' perceptions regarding improvements in governance efficiency, administrative coordination, and regulatory effectiveness associated with CPEC implementation.



Table 2

Institutional Governance and Administrative Capacity Indicators

Variable	Mean	Std. Deviation
Government Institutional Efficiency	4.09	0.70
Administrative Coordination Mechanisms	4.03	0.73
Regulatory Policy Effectiveness	4.01	0.71
Strategic Planning Capacity	4.06	0.68
Public Sector Project Management	3.97	0.75

Table 2 demonstrated that government institutional efficiency received the highest mean score (M=4.09, SD=0.70), reflecting respondents' perception that state institutions became more effective in managing large-scale infrastructure projects under CPEC. Strategic planning capacity (M=4.06, SD=0.68) and administrative coordination mechanisms (M=4.03, SD=0.73) also showed positive evaluations, indicating that the corridor necessitated improved inter-governmental coordination and planning processes. However, public sector project management recorded the lowest mean (M=3.97, SD=0.75), suggesting variability in perceptions regarding the effectiveness of project implementation practices across different CPEC initiatives.

Economic Development and Investment Opportunities

Economic development and investment opportunities represented another important dimension of the political economy associated with CPEC.

Table 3

Economic Development and Investment Opportunity Indicators

Variable	Mean	Std. Deviation
Foreign Direct Investment Attraction	4.11	0.69
Industrial Development Expansion	4.05	0.72
Trade Connectivity Improvement	4.13	0.67
Employment Generation Opportunities	4.02	0.71
Business Environment Enhancement	3.99	0.74

The results in Table 3 indicated that trade connectivity improvement attained the highest mean score (M=4.13, SD=0.67), confirming respondents' strong agreement that enhanced transportation infrastructure facilitated better market access and trade efficiency. Foreign direct investment attraction (M=4.11, SD=0.69) and industrial development expansion (M=4.05, SD=0.72) also received high ratings, suggesting that CPEC investments successfully stimulated investor interest and manufacturing growth. Business environment enhancement recorded a slightly lower mean (M=3.99, SD=0.74), indicating that while economic improvements were evident, challenges remained in creating fully conducive conditions for private sector development.

Regional Development and Socio-Economic Transformation

Regional development represented a significant objective of CPEC, as the corridor aimed to promote balanced economic growth across different provinces.

Table 4

Regional Development and Socio-Economic Transformation Indicators

Variable	Mean	Std. Deviation
Regional Infrastructure Accessibility	4.08	0.70
Rural Economic Development	3.96	0.75
Urban Industrial Expansion	4.04	0.69
Social Development Opportunities	3.98	0.73
Regional Economic Integration	4.06	0.71

Table 4 revealed that regional infrastructure accessibility scored highly (M=4.08, SD=0.70), indicating that improved road networks and transportation corridors enhanced connectivity between economic centres



and remote areas. Regional economic integration (M=4.06, SD=0.71) and urban industrial expansion (M=4.04, SD=0.69) also demonstrated positive perceptions, suggesting that CPEC contributed to greater economic linkage among Pakistani regions. However, rural economic development (M=3.96, SD=0.75) and social development opportunities (M=3.98, SD=0.73) received comparatively lower ratings, highlighting concerns about the corridor's limited reach in addressing rural poverty and social sector improvements.

Table 5
Comparative Perception of CPEC Benefits by Province

Province	Infrastructure Improvement (Mean)	Economic Opportunities (Mean)	Governance Efficiency (Mean)	Social Development (Mean)
Punjab	4.25	4.18	4.10	4.02
Sindh	4.10	4.05	4.00	3.90
Khyber Pakhtunkhwa	4.15	4.08	4.02	3.88
Baluchistan	3.90	3.85	3.80	3.70

Table 5 demonstrated significant provincial variations in perceptions of CPEC benefits, with Punjab recording the highest mean scores across all indicators, particularly in infrastructure improvement (M=4.25) and economic opportunities (M=4.18). Baluchistan consistently showed the lowest ratings, especially in social development (M=3.70) and governance efficiency (M=3.80), reflecting concerns about the province receiving fewer developmental benefits compared to other regions. These provincial disparities suggested that while CPEC contributed to national-level infrastructure enhancement, the distribution of benefits remained uneven, potentially exacerbating existing regional inequalities.

Table 6
Perceived Effectiveness of CPEC Project Implementation Phases

Implementation Phase	Mean	Std. Deviation
Planning and Feasibility	4.02	0.68
Land Acquisition and Resettlement	3.75	0.81
Construction and Development	4.10	0.66
Monitoring and Evaluation	3.88	0.74
Operation and Maintenance	3.92	0.70

The findings in Table 6 revealed that construction and development phase received the highest effectiveness rating (M=4.10, SD=0.66), indicating strong performance in physical implementation of CPEC projects. Planning and feasibility also scored well (M=4.02, SD=0.68), suggesting adequate preparatory work. However, land acquisition and resettlement recorded the lowest mean (M=3.75, SD=0.81), highlighting significant challenges related to displacement, compensation disputes, and community resistance that affected project timelines and social acceptance.

Table 7
Sector-Wise Impact of CPEC on Employment

Sector	Mean Employment Impact	Std. Deviation
Construction	4.20	0.65
Energy and Power	4.15	0.67
Transport and Logistics	4.10	0.68
Manufacturing	4.00	0.72
Agriculture	3.70	0.80
Services and Retail	3.85	0.75

Table 7 demonstrated that construction (M=4.20, SD=0.65) and energy sectors (M=4.15, SD=0.67) experienced the highest employment generation impact, reflecting the labour-intensive nature of infrastructure and power projects under CPEC. Transport and logistics (M=4.10, SD=0.68) and manufacturing (M=4.00,



SD=0.72) also showed positive employment effects. However, agriculture recorded the lowest mean (M=3.70, SD=0.80), indicating that the corridor's employment benefits remained concentrated in urban-industrial sectors while rural agricultural communities experienced limited direct employment opportunities.

Table 8

Public Perception of CPEC's Impact on Environmental Sustainability

Environmental Indicator	Mean	Std. Deviation
Air Quality Degradation	3.60	0.85
Water Resource Management	3.55	0.88
Land Use and Deforestation	3.50	0.90
Environmental Impact Assessments (EIAs)	3.40	0.92
Green Energy Initiatives	4.05	0.70

Table 8 revealed that green energy initiatives received positive perceptions (M=4.05, SD=0.70), reflecting appreciation for CPEC's investment in renewable and clean energy projects. However, environmental concerns were evident across multiple indicators, with environmental impact assessments scoring lowest (M=3.40, SD=0.92), suggesting inadequate implementation of environmental safeguards. Air quality degradation (M=3.60), water resource management (M=3.55), and land use concerns (M=3.50) indicated that respondents recognized significant environmental costs associated with rapid infrastructure development.

Table 9

Stakeholder Confidence in CPEC's Long-Term Sustainability

Stakeholder Group	Confidence Level (Mean)	Std. Deviation
Government Officials	4.30	0.60
Private Sector Investors	4.25	0.62
Academics and Researchers	3.95	0.75
Civil Society Organizations	3.70	0.80
Local Communities	3.60	0.85

Table 9 demonstrated that government officials (M=4.30, SD=0.60) and private sector investors (M=4.25, SD=0.62) expressed the highest confidence in CPEC's long-term sustainability, reflecting their institutional and commercial interests in project continuity. Academics showed moderate confidence (M=3.95, SD=0.75), while civil society organizations (M=3.70) and local communities (M=3.60) exhibited significantly lower confidence levels, indicating concerns about transparency, benefit-sharing, and social and environmental safeguards in project implementation.

Table 10

CPEC's Contribution to SDG Alignment in Pakistan

Sustainable Development Goal (SDG)	Mean Contribution	Std. Deviation
SDG 7: Affordable and Clean Energy	4.30	0.60
SDG 9: Industry, Innovation, and Infrastructure	4.35	0.58
SDG 8: Decent Work and Economic Growth	4.10	0.67
SDG 10: Reduced Inequalities	3.65	0.82
SDG 11: Sustainable Cities and Communities	3.90	0.74
SDG 13: Climate Action	3.50	0.88

Table 10 revealed that CPEC's strongest contributions aligned with SDG 9 (Industry, Innovation, and Infrastructure: M=4.35) and SDG 7 (Affordable and Clean Energy: M=4.30), confirming the corridor's primary focus on physical infrastructure and energy development. Moderate contributions were observed for SDG 8 (Economic Growth: M=4.10) and SDG 11 (Sustainable Cities: M=3.90). However, significantly lower ratings for SDG 10 (Reduced Inequalities: M=3.65) and SDG 13 (Climate Action: M=3.50) indicated that social equity and environmental sustainability remained underrepresented in CPEC's developmental



outcomes.

Table 11

Public Satisfaction with CPEC-Related Information and Transparency

Aspect of Transparency	Mean Satisfaction	Std. Deviation
Access to Project Information	3.60	0.83
Clarity of Investment Agreements	3.45	0.87
Public Consultation and Participation	3.30	0.90
Media Coverage and Awareness	3.80	0.76
Grievance Redressal Mechanisms	3.25	0.92

Table 11 demonstrated that media coverage and awareness received the highest satisfaction rating (M=3.80, SD=0.76), indicating reasonable public access to general information about CPEC through media channels. However, public consultation and participation (M=3.30, SD=0.90) and grievance redressal mechanisms (M=3.25, SD=0.92) recorded the lowest scores, revealing significant deficiencies in community engagement processes and formal mechanisms for addressing public concerns related to project implementation.

Table 12

Perceived Impact of CPEC on Gender-Inclusive Development

Gender Indicator	Mean	Std. Deviation
Employment Opportunities for Women	3.40	0.89
Access to Skill Development Programs	3.50	0.85
Women's Participation in Decision-Making	3.20	0.93
Gender-Sensitive Infrastructure	3.30	0.88
Overall Gender Equity Impact	3.35	0.90

Table 12 revealed generally low perceptions regarding CPEC's contribution to gender-inclusive development. Access to skill development programs received the highest rating (M=3.50, SD=0.85), suggesting some opportunities for women's capacity building. However, women's participation in decision-making scored lowest (M=3.20, SD=0.93), indicating that women remained largely excluded from planning and governance processes related to CPEC projects. The overall gender equity impact (M=3.35) suggested that the corridor's benefits were not adequately reaching women or addressing structural gender inequalities.

Table 13

Cross-Sectoral Coordination Effectiveness Under CPEC

Coordination Type	Mean Effectiveness	Std. Deviation
Federal-Provincial Coordination	4.00	0.71
Inter-Ministerial Coordination	3.90	0.74
Public-Private Partnership (PPP) Coordination	4.05	0.68
International Stakeholder Coordination	4.10	0.66
Local Government Involvement	3.60	0.80

Table 13 demonstrated that international stakeholder coordination (M=4.10, SD=0.66) and public-private partnership coordination (M=4.05, SD=0.68) received the highest effectiveness ratings, reflecting strong collaboration between Pakistani and Chinese institutions and effective engagement with private sector entities. Federal-provincial coordination also showed positive results (M=4.00, SD=0.71). However, local government involvement recorded the lowest mean (M=3.60, SD=0.80), indicating that district and municipal governments were largely bypassed in planning and implementation processes, limiting grassroots ownership and responsiveness to local needs.



Table 14

Frequency of CPEC-Related Development Issues Reported in Media

Issue Type	Frequency (N)	Percentage (%)
Economic Growth and Investment	45	30.0
Governance and Transparency	25	16.7
Environmental Concerns	20	13.3
Regional Disparities	18	12.0
Social and Cultural Impact	15	10.0
Security and Geopolitical Issues	27	18.0
Total	150	100%

Table 14 revealed that economic growth and investment dominated media coverage of CPEC (30.0%), reflecting the primary framing of the corridor as an economic development initiative. Security and geopolitical issues constituted the second most frequently reported category (18.0%), highlighting concerns about regional stability and strategic implications. Governance and transparency issues (16.7%) and environmental concerns (13.3%) received moderate attention, while social and cultural impacts (10.0%) were least represented, suggesting that media discourse prioritized economic and security narratives over social and environmental dimensions of development.

5. Discussion

The findings of this study revealed that the China-Pakistan Economic Corridor has played a significant role in reshaping Pakistan's developmental trajectory through infrastructure modernization, energy security enhancement, and economic connectivity improvements. The results demonstrated that infrastructure development improvement recorded the highest mean score ($M=4.18$, $SD=0.67$), confirming earlier research that highlighted the transformative impact of CPEC investments on Pakistan's physical infrastructure networks (Prince, 2024; Ali et al., 2025). This finding aligned with studies emphasizing that transport corridors and energy projects under CPEC had substantially reduced logistical bottlenecks and addressed chronic energy shortages that historically constrained industrial growth (Gul et al., 2022; Khan and Bukhari, 2024).

The study's findings regarding institutional capacity strengthening ($M=4.07$, $SD=0.72$) and policy coordination efficiency ($M=4.05$, $SD=0.71$) corroborated scholarly arguments that mega-development projects necessitate significant administrative reorganization and enhanced governance mechanisms (Ahmad et al., 2025; Shahzad & Sunawar, 2024). The positive perceptions of government institutional efficiency ($M=4.09$) and strategic planning capacity ($M=4.06$) suggested that CPEC implementation had stimulated improvements in inter-governmental coordination and development planning processes. However, the relatively lower rating for public sector project management ($M=3.97$, $SD=0.75$) indicated persistent challenges in implementation effectiveness, consistent with research highlighting administrative capacity constraints in developing country contexts (Rizvi et al., 2022).

The economic dimensions of CPEC examined in this study revealed strong positive perceptions regarding trade connectivity improvement ($M=4.13$), foreign direct investment attraction ($M=4.11$), and industrial development expansion ($M=4.05$). These findings supported empirical evidence indicating that CPEC-related investments had enhanced Pakistan's export potential, attracted international investors, and stimulated manufacturing sector growth through special economic zones and industrial clusters (Iqbal & Tayyab, 2025; Murad, 2025). The sectoral employment analysis (Table 7) further demonstrated that construction ($M=4.20$) and energy sectors ($M=4.15$) experienced the most significant employment generation, reflecting the labour-intensive nature of infrastructure development. However, the limited employment impact on agriculture ($M=3.70$) suggested that CPEC's economic benefits remained concentrated in urban-industrial sectors, potentially widening rural-urban economic disparities.

A critical contribution of this study was the identification of significant provincial disparities in CPEC benefit distribution (Table 5). Punjab consistently recorded the highest mean scores across all development indicators, while Baluchistan showed the lowest ratings, particularly in social development ($M=3.70$) and governance efficiency ($M=3.80$). These findings aligned with research emphasizing that infrastructure



investments and industrial activities concentrated in specific regions could exacerbate inter-provincial economic inequalities (Jawad et al., 2025; Nazeer et al., 2024). The regional development analysis (Table 4) further confirmed this pattern, with rural economic development (M=3.96) and social development opportunities (M=3.98) scoring lower than infrastructure accessibility (M=4.08) and urban industrial expansion (M=4.04). These results underscored the political economy tensions inherent in mega-development projects, where the distribution of costs and benefits becomes subject to regional political contestation.

The implementation phase analysis (Table 6) revealed that while construction and development phases performed strongly (M=4.10), land acquisition and resettlement processes recorded the lowest effectiveness rating (M=3.75, SD=0.81). This finding corroborated research documenting community resistance, compensation disputes, and displacement concerns associated with CPEC infrastructure projects (Shahani, 2025; Khizar and Ahmad, 2022). The transparency and governance indicators (Table 11) further highlighted deficiencies in public consultation (M=3.30) and grievance redressal mechanisms (M=3.25), suggesting that inadequate community engagement processes undermined social acceptance and project sustainability. These results reinforced scholarly arguments that institutional reforms and participatory governance mechanisms are essential for ensuring equitable development outcomes (Afzal et al., 2025).

The environmental sustainability analysis (Table 8) presented a mixed picture, with green energy initiatives receiving positive ratings (M=4.05), but concerns persisting regarding environmental impact assessments (M=3.40), air quality degradation (M=3.60), and water resource management (M=3.55). These findings aligned with research highlighting environmental costs associated with rapid infrastructure development under the Belt and Road Initiative (Wolf, 2020; Zhang and Smith, 2021). The SDG alignment analysis (Table 10) further confirmed this pattern, demonstrating strong contributions to SDG 9 (Infrastructure: M=4.35) and SDG 7 (Energy: M=4.30), but weak performance on SDG 10 (Reduced Inequalities: M=3.65) and SDG 13 (Climate Action: M=3.50). These results suggested that while CPEC advanced economic infrastructure objectives, social equity and environmental sustainability remained underrepresented in developmental outcomes.

The gender-inclusive development analysis (Table 12) revealed particularly concerning findings, with all indicators scoring below 3.50. Women's participation in decision-making recorded the lowest mean (M=3.20), indicating systematic exclusion from planning and governance processes related to CPEC projects. These results highlighted the need for gender-sensitive development approaches that ensure women benefit from infrastructure investments and participate meaningfully in project implementation (Rafiq-uz-Zaman, 2025a, 2025b). The limited attention to gender dimensions in CPEC discourse, as reflected in media coverage analysis (Table 14), suggested that social inclusion considerations remained marginalized in corridor development narratives.

Stakeholder confidence analysis (Table 9) revealed significant divergence between institutional and community perspectives. Government officials (M=4.30) and private sector investors (M=4.25) expressed high confidence in CPEC's long-term sustainability, while civil society organizations (M=3.70) and local communities (M=3.60) exhibited significantly lower confidence levels. This confidence gap reflected underlying tensions between elite development narratives and grassroots experiences, consistent with political economy analyses emphasizing the contested nature of mega-project benefits (Samad, 2025; Shah and Sakeena, 2022). The media coverage patterns (Table 14), dominated by economic growth narratives (30.0%) with limited attention to social and environmental dimensions, may have contributed to this disconnect between official discourse and community perceptions.

The cross-sectoral coordination analysis (Table 13) demonstrated strong performance in international stakeholder coordination (M=4.10) and public-private partnerships (M=4.05), reflecting effective collaboration between Pakistani and Chinese institutions. However, the low rating for local government involvement (M=3.60) indicated that district and municipal governments remained peripheral to planning and implementation processes. This finding supported research emphasizing that centralized project management approaches can undermine local ownership and responsiveness to community needs (Rizvi et al., 2022; Ahmad et al., 2025).

In conclusion, this study's comprehensive analysis demonstrated that CPEC functioned not merely as



a physical infrastructure initiative but as an institutional and economic transformation framework with profound implications for Pakistan's political economy. The corridor successfully addressed critical infrastructure deficits and stimulated economic activity, but significant challenges remained regarding equitable benefit distribution, environmental sustainability, gender inclusion, and governance transparency. These findings underscored the importance of understanding mega-development projects through political economy lenses that recognize the complex interplay between economic investments, institutional capacities, and social outcomes.

6. Conclusion

This study comprehensively examined the relationship between the China-Pakistan Economic Corridor (CPEC), state capacity, and the political economy of development in Pakistan through analysis of multiple developmental dimensions. The findings confirmed that CPEC has played a transformative role in addressing Pakistan's critical infrastructure deficits, with infrastructure development improvement recording the highest mean score ($M=4.18$), followed by trade connectivity enhancement ($M=4.13$) and foreign direct investment attraction ($M=4.11$). These results demonstrated that the corridor successfully improved physical connectivity, energy security, and economic integration, contributing to enhanced productive capacity and investment potential across multiple sectors.

The institutional governance analysis revealed positive perceptions regarding government efficiency ($M=4.09$), strategic planning capacity ($M=4.06$), and administrative coordination mechanisms ($M=4.03$), indicating that CPEC implementation stimulated improvements in policy coordination and development management systems. However, challenges persisted in public sector project management ($M=3.97$) and land acquisition processes ($M=3.75$), suggesting that institutional capacity strengthening remained incomplete and required sustained reform efforts.

A critical finding of this study concerned the uneven distribution of CPEC benefits across provinces and regions. Punjab consistently recorded higher mean scores across all development indicators, while Baluchistan showed significantly lower ratings, particularly in social development ($M=3.70$) and governance efficiency ($M=3.80$). Rural economic development ($M=3.96$) and social development opportunities ($M=3.98$) scored lower than urban industrial indicators, highlighting concerns that the corridor's benefits remained concentrated in urban centres and economically advanced regions.

The environmental and social dimensions of CPEC revealed significant challenges. While green energy initiatives received positive ratings ($M=4.05$), environmental impact assessments ($M=3.40$) and climate action contributions ($M=3.50$) scored poorly, indicating inadequate attention to environmental safeguards. Gender-inclusive development indicators all remained below 3.50, with women's participation in decision-making recording the lowest mean ($M=3.20$), reflecting systematic exclusion of gender considerations from corridor planning and implementation.

Stakeholder confidence analysis revealed a significant gap between institutional and community perspectives, with government officials ($M=4.30$) and private investors ($M=4.25$) expressing high confidence in CPEC's sustainability, while local communities ($M=3.60$) and civil society organizations ($M=3.70$) demonstrated considerably lower confidence. This confidence gap, combined with deficiencies in public consultation ($M=3.30$) and grievance redressal mechanisms ($M=3.25$), suggested that community engagement processes remained inadequate for addressing local concerns and ensuring social acceptance.

The study concluded that CPEC functioned as more than a physical infrastructure initiative; it operated as an institutional and economic transformation framework that reshaped governance systems, development priorities, and policy coordination mechanisms in Pakistan. However, the full realization of CPEC's developmental potential required addressing persistent challenges related to equitable benefit distribution, environmental sustainability, gender inclusion, governance transparency, and community participation. Strengthening state capacity to manage these complex developmental challenges would be essential for ensuring that CPEC's benefits reached all segments of Pakistani society and contributed to sustainable and inclusive national development.

7. Recommendations

Based on the comprehensive findings of this study, the following recommendations are proposed to



enhance the developmental impact of CPEC and address identified challenges:

First, institutional strengthening and governance transparency must be prioritized to improve project implementation effectiveness and public trust. The findings revealed that while government institutional efficiency (M=4.09) showed improvement, public sector project management (M=3.97) and land acquisition processes (M=3.75) demonstrated persistent weaknesses. Policymakers should establish robust monitoring and evaluation systems, enhance regulatory frameworks, and ensure transparent decision-making processes for CPEC projects. Independent oversight mechanisms, mandatory disclosure of project agreements, and regular public reporting on project progress would strengthen accountability and reduce information asymmetries that undermine public confidence.

Second, balanced regional development requires urgent policy attention to address the significant provincial disparities documented in this study. The finding that Baluchistan consistently recorded the lowest mean scores across all development indicators, particularly in social development (M=3.70) and governance efficiency (M=3.80), indicated that infrastructure investments had not translated into equitable regional benefits. The government should develop targeted development programs for underserved regions, including infrastructure projects in rural areas, special economic zones in less developed districts, and capacity-building initiatives for local governments. Provincial quota systems for CPEC-related employment and procurement could help ensure that benefits reach marginalized communities.

Third, environmental sustainability must be integrated into CPEC project planning and implementation. The low ratings for environmental impact assessments (M=3.40) and climate action contributions (M=3.50) suggested inadequate attention to environmental safeguards. All CPEC projects should undergo comprehensive environmental and social impact assessments with mandatory public disclosure and consultation. Green infrastructure standards should be adopted, renewable energy investments expanded, and environmental monitoring mechanisms strengthened to mitigate the ecological costs of rapid infrastructure development.

Fourth, gender-inclusive development approaches require systematic integration into CPEC frameworks. The consistently low ratings across all gender indicators, particularly women's participation in decision-making (M=3.20), revealed that women remained largely excluded from corridor benefits and governance processes. Gender-sensitive project design, targeted skill development programs for women, affirmative action in CPEC-related employment, and women's representation in planning and oversight bodies would help address these disparities. The Integrated Skill-Based Education Framework (ISEF) proposed by Rafiq-uz-Zaman (2025b) offers a valuable model for aligning educational and training programs with the workforce demands generated by CPEC investments.

Fifth, community engagement and participatory governance mechanisms must be strengthened to address the confidence gap between institutional stakeholders and local communities. The low ratings for public consultation (M=3.30) and grievance redressal mechanisms (M=3.25) indicated fundamental deficiencies in community participation processes. Formal mechanisms for community consultation throughout project cycles, accessible grievance redressal systems, and meaningful local government involvement in planning and implementation would enhance social acceptance and ensure that projects respond to local needs and concerns.

Sixth, industrial diversification and private sector development should be accelerated to maximize CPEC's economic benefits. While trade connectivity (M=4.13) and foreign investment attraction (M=4.11) showed strong performance, business environment enhancement (M=3.99) and agricultural sector employment (M=3.70) lagged behind. Promoting special economic zones as hubs for technology transfer, entrepreneurship development, and small and medium enterprise growth would strengthen economic resilience. Linkages between CPEC industrial zones and local supply chains should be developed to ensure that economic benefits extend beyond large-scale infrastructure projects.

Seventh, transparency and information access must be improved to address public concerns identified in this study. The low satisfaction ratings for clarity of investment agreements (M=3.45) and access to project information (M=3.60) indicated that information asymmetries undermined public trust. The government should establish centralized information platforms providing comprehensive, accessible information on CPEC



projects, including investment terms, environmental clearances, land acquisition details, and project timelines. Regular stakeholder consultations and public hearings would complement information disclosure with meaningful opportunities for public input.

Eighth, alignment of CPEC with sustainable development goals requires systematic attention, particularly regarding SDG 10 (Reduced Inequalities: M=3.65) and SDG 13 (Climate Action: M=3.50). Development planning should explicitly incorporate SDG targets and indicators into CPEC project design, monitoring, and evaluation frameworks. This alignment would ensure that infrastructure investments contribute not only to economic growth but also to social equity, environmental sustainability, and inclusive development outcomes.

Ninth, local government capacity building is essential given the low rating for local government involvement (M=3.60) in CPEC implementation. District and municipal governments should be empowered through technical training, resource allocation, and formal roles in project planning and oversight. Decentralized approaches to infrastructure development would enhance responsiveness to local needs and strengthen grassroots ownership of development processes.

Tenth, media and academic discourse on CPEC should be encouraged to address the full spectrum of developmental dimensions. The media coverage analysis (Table 14) revealed disproportionate focus on economic growth narratives (30.0%) with limited attention to social and environmental dimensions. Supporting independent research, facilitating multi-stakeholder dialogues, and promoting balanced media reporting would contribute to more informed public discourse and evidence-based policy making regarding CPEC's developmental implications.

In conclusion, maximizing the long-term developmental benefits of CPEC requires moving beyond infrastructure-focused approaches toward comprehensive frameworks that integrate institutional strengthening, regional equity, environmental sustainability, gender inclusion, and participatory governance. The findings of this study demonstrate that state capacity to manage these complex developmental challenges will determine whether CPEC fulfils its transformative potential or exacerbates existing inequalities and governance deficiencies.

Authors Contributions

All the authors participated in the ideation, development, and final approval of the manuscript, making significant contributions to the work reported.

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Conflicts of Interest

The authors declare no conflict of interest.

Data Availability Statement

The dataset analysed in the current study is not publicly available due to ethical and confidentiality considerations. However, it is available from the corresponding author upon reasonable request.

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